Quiz Results

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Score: 1/10

Question 1: What is the primary responsibility of the Network Layer?

A. Frame delivery between directly connected nodes

B. End-to-end packet delivery across multiple hops

C. Managing application-level communication

D. Encrypting data for secure transmission

Explanation: The Network Layer handles logical addressing and routing, ensuring packets reach their destination across potentially many networks.

Question 2: Which network service offers guaranteed delivery order and consistent performance but requires initial setup overhead?

A. Datagram (connectionless)

B. Virtual Circuit (connection-oriented)

C. Best-effort delivery

D. Unreliable datagram

Explanation: Virtual circuits establish a dedicated path before data transfer, ensuring reliable and ordered delivery, unlike datagrams.

Question 3: What is the core principle of Dijkstra's algorithm?

A. Finding the longest path between nodes

B. Determining the optimal network topology

C. Finding the shortest path between nodes

D. Calculating the bandwidth of a network connection

Explanation: Dijkstra's algorithm iteratively calculates the shortest path from a source node to all other reachable nodes in a network.

Question 4: How does link state routing address the 'count-to-infinity' problem?

A. By using distance vectors

B. By distributing the entire network topology

C. By limiting hop counts

D. By ignoring failed links

Explanation: Each router having a complete network map allows independent shortest path calculations, avoiding the slow convergence of distance vector routing.

Question 5: Why is hierarchical routing beneficial in large networks?

A. It increases routing table size

B. It simplifies network management

C. It improves scalability by reducing routing table size

D. It reduces network security

Explanation: Hierarchical routing summarizes routing information for large groups of routers, making tables smaller and more manageable.

Question 6: What is a key advantage of multi-destination routing over sending distinct packets for broadcasting?

A. Increased bandwidth consumption

B. Simpler implementation

C. Conserved bandwidth

D. Requires knowledge of all destinations

Explanation: Multi-destination routing efficiently creates copies of the packet only when necessary, saving bandwidth compared to sending individual packets.

Question 7: How does Reverse Path Forwarding (RPF) prevent broadcast storms?

A. By amplifying broadcast signals

B. By discarding packets received on the preferred path

C. By forwarding all received broadcast packets

D. By discarding packets not received on the preferred path

Explanation: RPF checks if the broadcast packet arrived on the shortest path; if not, it's likely a duplicate and discarded, preventing loops.

Question 8: What is the primary advantage of using a spanning tree for broadcasting?

A. Increases redundant transmissions

B. Creates network loops

C. Ensures each router receives the broadcast exactly once

D. Complicates network management

Explanation: Spanning trees create a loop-free path for broadcasts, maximizing efficiency and minimizing redundant packets.

Question 9: Which multicast routing method proactively forwards traffic to all interfaces until explicitly pruned?

A. Sparse mode

B. Dense mode

C. Anycast mode

D. Unicast mode

Explanation: Dense mode floods the network initially and relies on pruning to reduce unnecessary traffic, unlike sparse mode's on-demand forwarding.

Question 10: How do core-based trees address the resource issues associated with pruning in multicast routing?

A. By increasing the number of trees per router

B. By using a central core router for each multicast group

C. By disabling pruning altogether

D. By increasing multicast traffic

Explanation: Core-based trees simplify multicast management and reduce router resource requirements by creating a shared tree rooted at a core router.